Claims

1.- Method for channel allocation in an ad-hoc radio communication system comprising devices having an equivalent communication architecture, the devices being gathered in several piconets, the devices of a same piconet being able to communicate with one another, a piconet coordinator (PNC) being defined among the devices for each piconet, the multiple access scheme for the radio communication between the devices being a Code Division Multiple Access (CDMA) scheme,

characterized in that the set of available codes is split into pre-defined disjoined subsets of codes (C_i), all the subsets of codes (C_i) being known by each device, and all the devices of a same piconet using codes in the same associated subset of codes (C_i) for communicating with one another,

and in that for each new device added in the ad-hoc radio communication system, it includes the following steps :

- the new device scans its radio environment looking for at least one used subset of codes (C_i) which is associated to a piconet,

- depending on the or each found used subset of codes (C_i) :

. the new device becomes a piconet coordinator (PNC) of a new piconet and selects a subset of codes (C_i) for the new piconet, or

. the new device decides to join an existing piconet among a set of available piconets, the subset of codes of which is already used and uses said subset of codes for the next communications with other devices of the joined piconet.

2.- Method according to claim 1, characterized in that a broadcast code (C_i^{bc}) is defined in each subset of codes (C_i) for the piconet coordinator (PNC) to broadcast information towards all the devices of the piconet and in that each new device added in the ad-hoc radio communication system listens to the radio environment looking for a or each broadcast code (C_i^{bc}) for determining the or each used subset of codes (C_i).

3.- Method according to any one of the preceding claims, characterized in that, if the new device found at least one used subset of codes (C_i) associated to a piconet, the new device determines, by applying an availability criteria, the set of available piconets among the piconets associated to the

or each found used subset of codes (C_i), and in that the set of available piconets only contains the piconets which complies with the availability criteria.

4.- Method according to claim 3, characterized in that the availability criteria is based on the load of the piconet.

5.- Method according to any one of the preceding claims, characterized in that :

- if the set of available piconets is empty, the new device becomes a piconet coordinator (PNC) of a new piconet and selects a not yet used subset of codes (C_i) for the new piconet,

- if the set of available piconets contains a single piconet, the new device joins said single piconet and uses the subset of codes (C_i) of said single piconet for the next communications ; and

- if the set of available piconets contains at least two piconets, the piconets are ordered according to a predetermined criteria and the new device joins the first piconet in the set of ordered available piconets.

6.- Method according to claim 5, characterized in that said criteria is the radio quality.

7.- Method according to any one of the preceding claims, characterized in that, when joining an existing piconet, the new device sends a request for attachment to the piconet coordinator (PNC) of the piconet and on reception of said request for attachment, the piconet coordinator (PNC) sends to the new device an indication of a reception code (C_i^j) among the subset of codes (C_i) associated to the piconet, the reception code (C_i^j) being to be used by the new device for reception of data.

8.- Method according to claim 7, characterized in that said indication of the reception code (C_i^j) to be used for reception of data is a pointer on 8 bits as defined in 802.15.3 standard, said pointer indicating the reception code (C_i^j) as known by the new device.

9.- Method according to any one of claims 7 and 8, characterized in that, after a new device has joined a piconet, the piconet coordinator (PNC) sends, to all the devices of the piconet, an identification of the new device together with an indication of the reception code (C_i^j) to be used for reception by the new device.

10.- Method according to any one of the preceding claims, character-
ized in that, when sending data with a given reception code (C_i^j) to another
device in the same piconet, a device sends attributes relating to the ex-
pected receiving device, and in that a device, the reception code (C_i^j) of
5   which is the given reception code (C_i^j), processes the sent data only if the
sent attributes relate to it.

11.- Device for an ad-hoc radio communication system, said system
comprising devices having an equivalent communication architecture, the
devices being gathered in several piconets, the device being able to com-
10   municate with other devices of a same piconet by implementing a Code Divi-
sion Multiple Access (CDMA) transmission method,

characterized in that the set of available codes is split into pre-defined dis-
joined subsets of codes (C_i), the device comprises means in which all the
subsets of codes (C_i) are stored, and the device is adapted to use the codes
15   from a subset of codes (C_i) associated to a piconet for communicating with
other devices of the piconet,

and in that the device includes :

- means for scanning the radio environment looking for at least one
used subset of codes (C_i) which is associated to a piconet when the
20   device is added in the ad-hoc radio communication system, and
- means for :

    - becoming a piconet coordinator (PNC) of a new piconet and
selecting a subset of codes (C_i) for the new piconet, or
    - joining an existing piconet among a set of available piconets,
25   the subset of codes of which is already used and using said
subset of codes for the next communications with other de-
vices of the joined piconet,

depending on the or each found used set of codes (C_i).

12.- Ad-hoc radio communication system comprising devices having
30   an equivalent communication architecture, the devices being gathered in
several piconets, the devices of a same piconet being able to communicate
with one another, each piconet including a piconet coordinator (PNC), the

multiple access scheme for the radio communication between the devices being a Code Division Multiple Access (CDMA) scheme,

characterized in that the set of available codes is split into pre-defined dis-joined subsets of codes (C_i), all the subsets of codes (C_i) being known by each device, and all the devices of a same piconet using codes in the same associated subset of codes (C_i) for communicating with one another,

and in that each device includes :

- means for scanning the radio environment looking for at least one used subset of codes (C_i) which is associated to a piconet when the device is added in the ad-hoc radio communication system, and

- means for :

- becoming a piconet coordinator (PNC) of a new piconet and selecting a not yet used subset of codes (C_i) for the new pi-conet, or

- joining an existing piconet among a set of available piconets, the subset of codes of which is already used and using said subset of codes for the next communications with other de-vices of the joined piconet,

depending on the or each found used set of codes (C_i).